Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Discussion

COVID-19: The disease of the anthropocene

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A close and tragic antecedent to COVID 19 is the Acquired Immune Deficiency Syndrome (AIDS) caused by a human immunodeficiency virus (HIV) infection. This disease was discovered in 1981, and in 2018 had affected about 40 million people and caused more than 750,000 deaths. HIV viruses are the result of multiple transmissions between species of immunodeficiency virus that naturally infect African primates. Most of these transfers probably resulted in viruses that spread limitedly in humans until one of these transmissions, which involved an immunodeficiency virus from chimpanzees in southeastern Cameroon, resulted in the leading cause of the pandemic in humans (Sharp and Hahn, 2011). The transmission of a virus from a wild animal spice to humans is not a rare event. In fact, a high proportion of human pathogens are zoonotic or were zoonotic in origin before being transmitted only to humans (Wolfe et al., 2007). Since the emergence of AIDS, many other epidemic infectious diseases, such as Ebola, SARS and MERS to name the most recent, have been caused by the transmission of viruses from wild animal species to humans as shown in 2008 by Jones et al. who identified 335 emerging infectious diseases between 1960 and 2004, and found that at least 60% of these diseases came from nonhuman animals (Jones et al., 2008).

These transmissions between non-human and human animal species are not, necessarily, the result of chance. There is strong evidence that ecological changes have led to increased rates of emerging and re-emerging diseases such as malaria, hantavirus lung syndrome, Nipah virus, and Ebola virus disease (Myers et al., 2013). Human activity is increasingly disruptively transforming the earth's natural habitats and ecosystems by intensely altering the patterns and mechanisms of interaction between species (Myers et al., 2013) and facilitating the transmission of infectious diseases across species and to humans (Patz et al., 2005). A study published in 2014 estimated that by 2050, 25 million kilometers of new roads would be built and that 9 out of 10 would occur in developing countries, including many regions that maintain exceptional biodiversity and vital ecosystem services. These roads often cause habitat loss and fragmentation, forest fires, overflows and other environmental degradations, often with irreversible impacts on ecosystems (Laurance et al., 2014). The complete causal sequences and impacts of these ecological changes are still poorly understood, but frequently these emerging zoonosis appear and spread in circumstances that denote the effects of an economic and commercial practices that destroys natural habitats and animal populations, including those of humans living there, in the absence of effective protection and regulatory policies.

In the case of COVID-19, the Chinese Center for Disease Control and Prevention has confirmed that the virus causing the outbreak of COVID 19 in Wuhan came from wild animals, whose meat was sold at the Hankou's market in Wuhan, in which about 120 animals of 75 different species were marketed, some of them alive, such as puppies of wolves, salamanders, crocodiles, scorpions, rats, squirrels, foxes, civets and turtles. The first group of patients with SARS-CoV 2 in Wuhan were mostly traders in that market. The circumstances of the origin of COVID-19 are similar to those of SARS, an outbreak in which the first group of patients were also wildlife traders in Guangdong City. Peter J Li, a law professor at the University of Houston, has been researching the problems associated with the distribution and sale of wild animals for human consumption in China for years. As Li explained the 25th of March in an article in the South China Morning Post, all wildlife trade

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activities in China have been banned since the 26th of January 2020, although the ban is temporary, with the aim of suspending trade only until the epidemic ends (Li, 2020). These markets should therefore become the appropriate substrate to allow SARS-CoV 2 virus being transmitted from some infected animals to traders and customers, and later to the rest of the population. According to PJ Li during years, the Chinese government's attempts to regulate this type of wildlife meat trade have been countered by the influence of a powerful trade lobby, the benefits of which depend on maintaining access to consumption of these animals by a predominantly affluent sector of Chinese society. To complete the causal chain, scientists' warnings about the potentially catastrophic effects of the risk of emerging infectious diseases have often not been heard. In the case of the previous SARS outbreak, the bat trade is likely to have put infected animals in contact with susceptible amplifier hosts, such as the masked civet palm (*Parguma larvata*) at some point in the wildlife supply chain, establishing a cycle in which susceptible people subsequently became infected (Fèvre et al., 2006). Zhong Nanshan and Guan Yi, both well-known SARS experts, had previously warned of the possibility of a pandemic originating in the wild meat markets in China and of the need to ban such commercial practices (Li, 2020).

John Vidal, in a recent article, has cogently pointed out the link between COVID-19 and planetary health (Vidal, 2020). Indeed, we suggest that COVID-19 is a paradigmatic example of an Anthropocene disease. It follows a complex sequence involving disruption of the natural, social, economic and governance systems. The destruction of natural habitats and the extinction of species, the poorly regulated capture, marketing and consumption of non-human animals, the influence of lobbies to nullify or delay measures to protect natural and social systems, the limitation of current scientific knowledge and the contempt by governments and companies of the available evidence, have all worked in an orchestrated sequence to facilitate the current COVID-19 pandemic. This sequence of distal causes is closely related to the global climate crisis and the rest of environmental disruptions of the Anthropocene. Consumption of fossil fuels for energy, deforestation and the conversion of natural habitats into farmland or extensive livestock are among the main sources of greenhouse gas emissions, and at the same facilitate the emergence of new zoonosis, such as SARS-CoV-2, with a pandemic potential. Oil and timber extraction in primary forest areas involves the opening of roads in hard-to-reach areas, encouraging contact between humans and wildlife, and facilitating hunting and bushmeat consumption (Wolfe et al., 2005). Advancing the agricultural frontier to respond to current food systems increases the frequency of ecotones, key areas in the onset of infectious diseases (Rohr et al., 2019). And at the same time, the destruction of habitats caused by these activities are the main causes of biodiversity loss, which is also associated with the emergence of infectious diseases (Civitello et al., 2015).

To control the COVID-19, the approach needs to focused on protecting human health with evidence-based prevention and control strategies, effective treatments for patients, vaccines to prevent infection and preparation of health systems to deal with a huge burden. However, as necessary as this is, a response focused on human health will result in a nearsighted vision. We need to look at COVID-19 from the perspective of Planetary Health, that is, to understand that the response to the pandemic must not only be the right one for humans but also the right one for the Planet. This point is especially relevant when we understand that COVID-19 has the same origin as climate change and global environmental degradation, the biggest challenges we face as humanity. Preventing cross-transmission of viruses from non-human animal species to humans becomes another compelling reason to urgently advocate for the preservation of natural ecosystems and stop the massive extinction of endangered species. Similarly, the protection of animal rights is becoming a key element in the regulation of human consumption of animal meat in the framework of sustainable food production, marketing and consumption systems. Markets, both food and securities, must be effectively regulated so that private profits do not become public tragedies. These solutions must be aligned with the reduction of internal and north-south inequalities, and at the same time be respectful of world diversity. If the pandemic subsides without causing an even greater global disruption, and we can all regain the precarious stability we were all living in, the real challenge will continue to be to transform our civilization into a just and sustainable society, achieving a zero level of greenhouse gas emissions no later than 2050 and this is humanity's great time trial race. The importance of the 2030 Sustainable Development Agenda is therefore paramount.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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